



**ARCTIC**  
**SDI** Arctic Spatial  
Data Infrastructure

## **Enabling Access to Arctic Location Based Information - the Arctic SDI**

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**Head of Arctic SDI Geoportal WG**

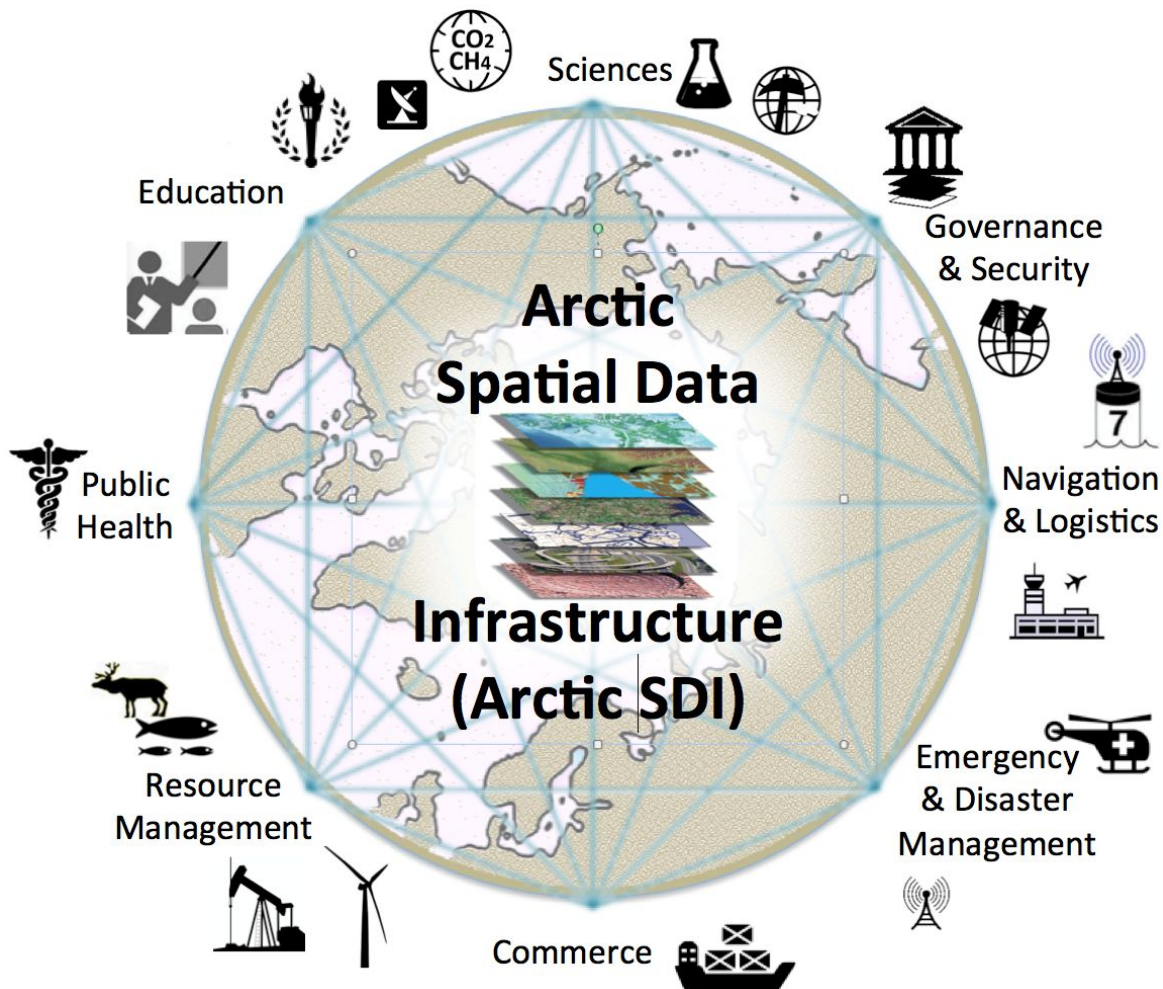
**National Land Survey of Finland**

[arctic-sdi.org](http://arctic-sdi.org)

***EFGS Conference***  
***16th October 2018***



# The Arctic SDI is focused on



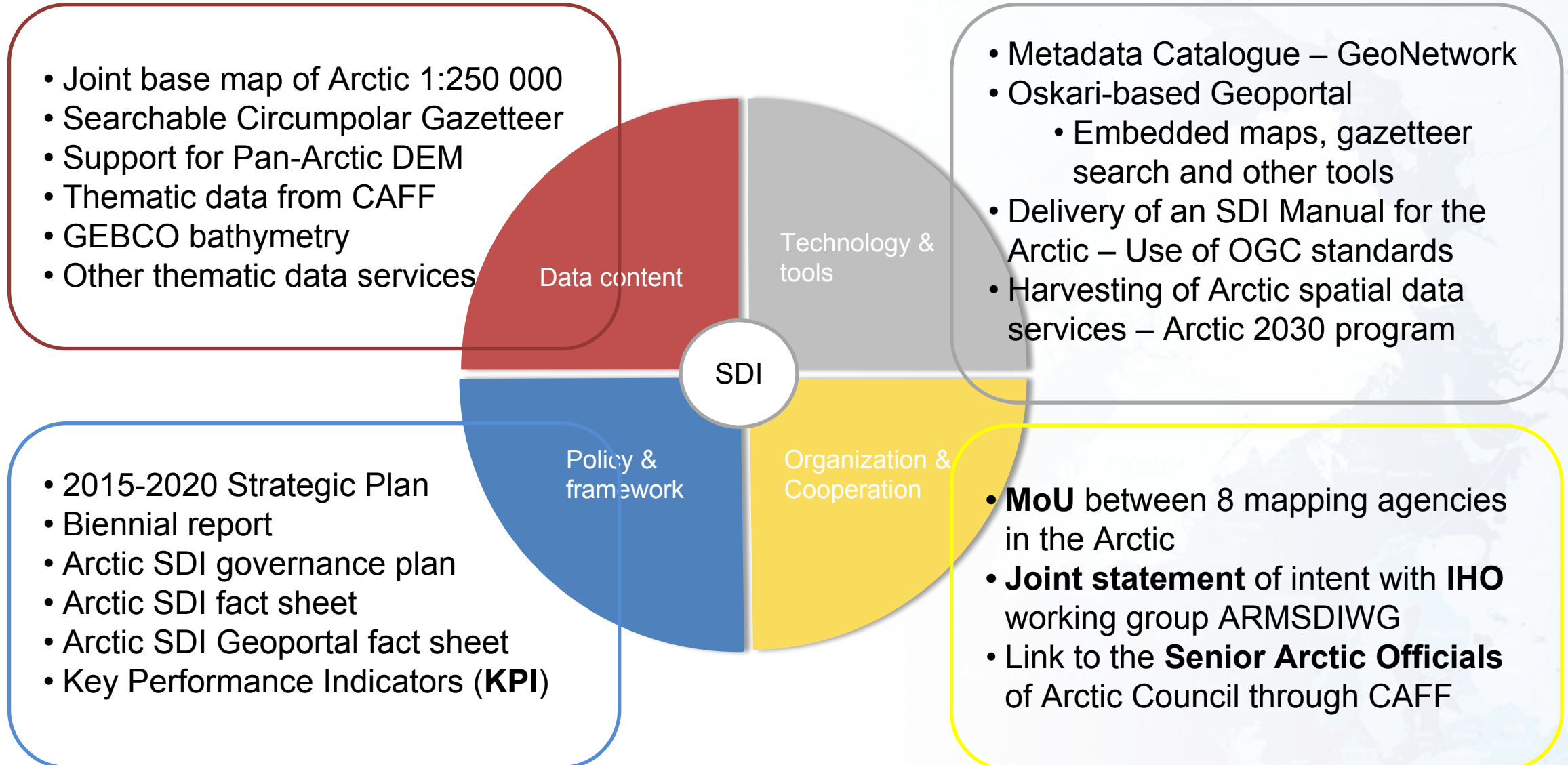
- **Facilitating access to geospatial information over the entire Arctic**
- -> to support social, economic, environmental, monitoring and decision-making in the Arctic
- Providing access to authoritative data, relevant thematic data and tools
- Working with Arctic stakeholders to expand and leverage from the SDI



# Data Providers and Stakeholders

- National Land Surveys
  - International Hydrographic Organization / ARHC
    - Arctic Regional Marine SDI Working Group ARMSDIWG
  - Polar Geospatial Data Center (Arctic DEM)
  - Arctic Council Working Groups (CAFF, AMAP, EPPR, PAME)
  - Global organizations, e.g. UN
  - Academic institutions in the Arctic
  - Public sector organizations
  - Business, media, citizens, NGOs,...
- **AMAP** = Arctic Monitoring and Assessment Programme
  - **CAFF** = Conservation of Arctic Flora and Fauna
  - **EPPR** = Emergency Prevention, Preparedness and Response
  - **PAME** = Protection of the Arctic Marine Environment

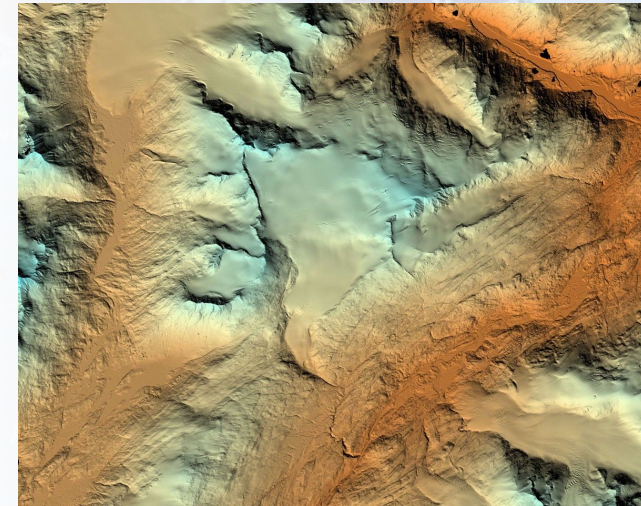
# Status of the Arctic SDI



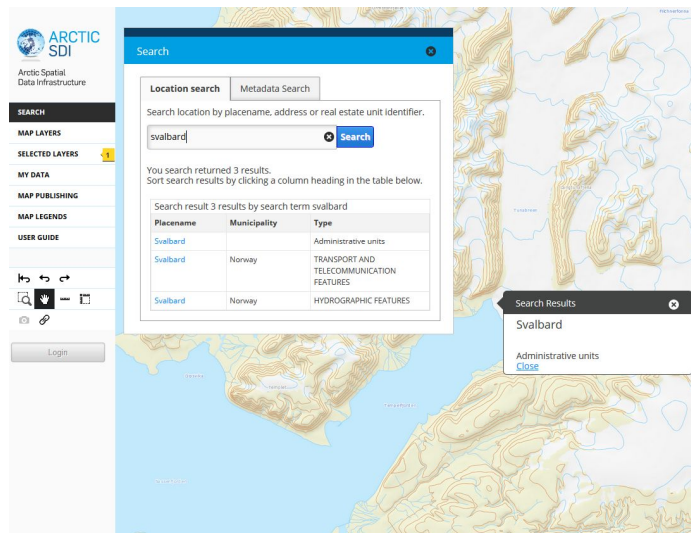


# Data Resources

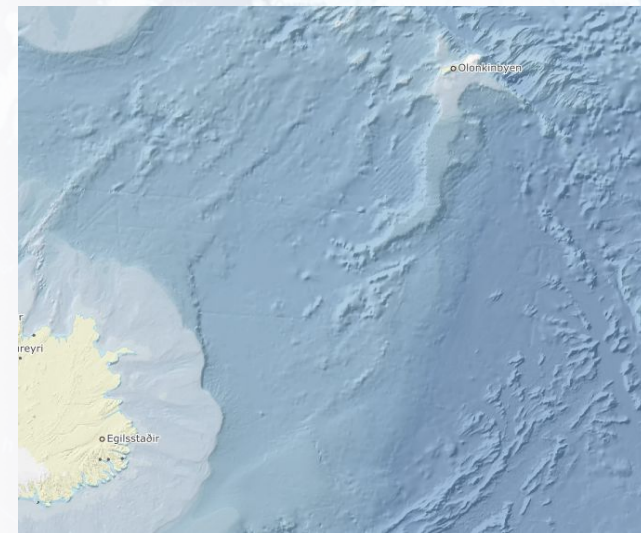
- Pan-Arctic Digital Elevation Map
- Marine Data
- Gazetteer Database and Search
- Arctic Reference Basemap



Pan-Arctic DEM



Gazetteer search

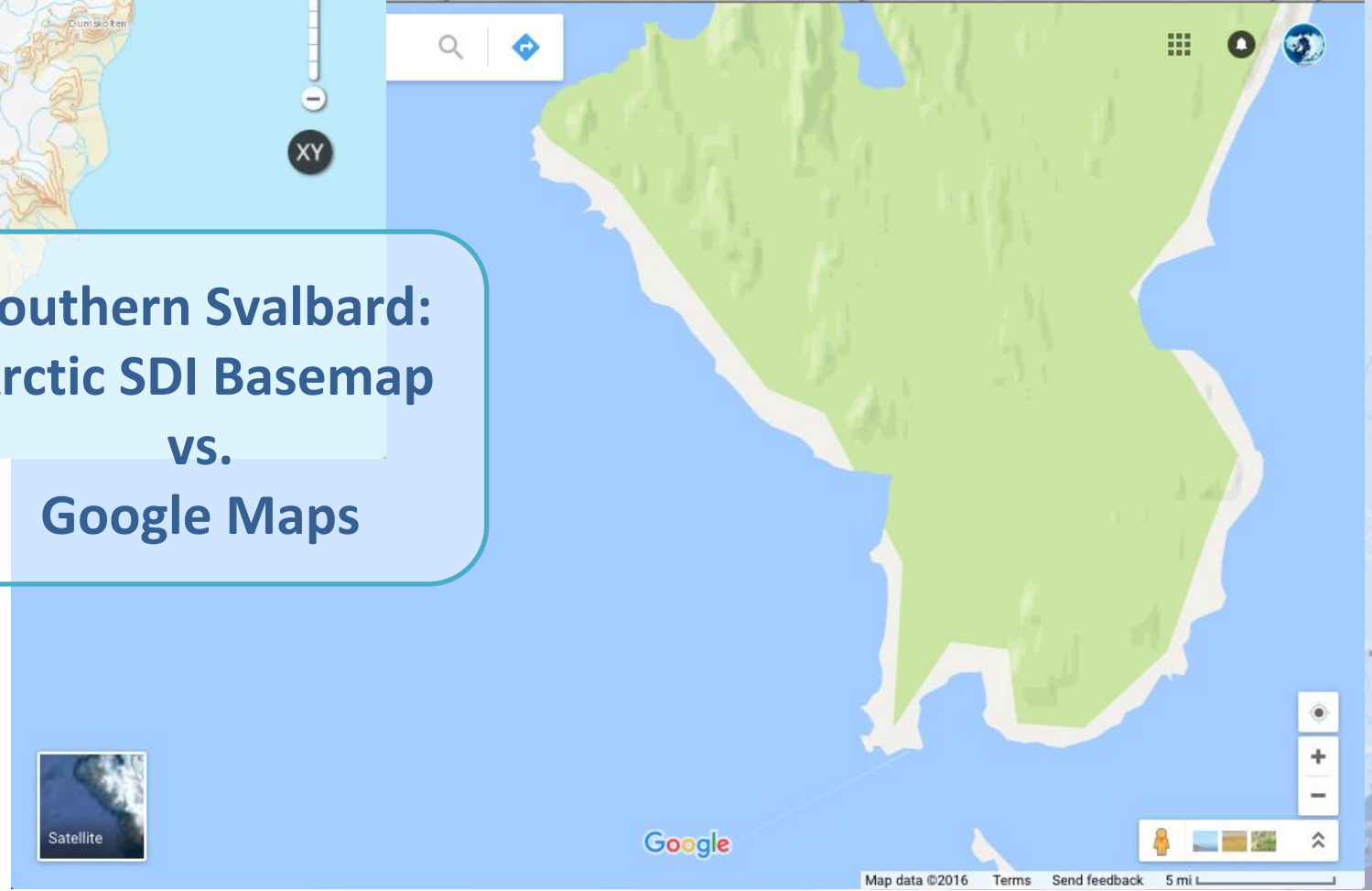


Bathymetry




Arctic SDI provides an **Authoritative Reference Basemap** produced by the 8 Arctic National Mapping Agencies

**Southern Svalbard:  
Arctic SDI Basemap  
vs.  
Google Maps**



**Arctic SDI provides  
access to authoritative  
data**



 **ARCTIC SDI**  
Arctic Spatial  
Data Infrastructure

SEARCH

MAP LAYERS

SELECTED LAYERS 3


MY DATA

MAP PUBLISHING

MAP LEGENDS

USER GUIDE

THEMATIC MAPS



### Map Legends

#### Shipping Accidents and Incident Causes

Shipping accidents and incident causes

- COLLISION
- DAMAGE TO VESSEL
- FIRE/EXPLOSION
- GROUNDING
- MACHINERY DAMAGE/FAILURE
- MISCELLANEOUS
- SUNK/SUBMERGED

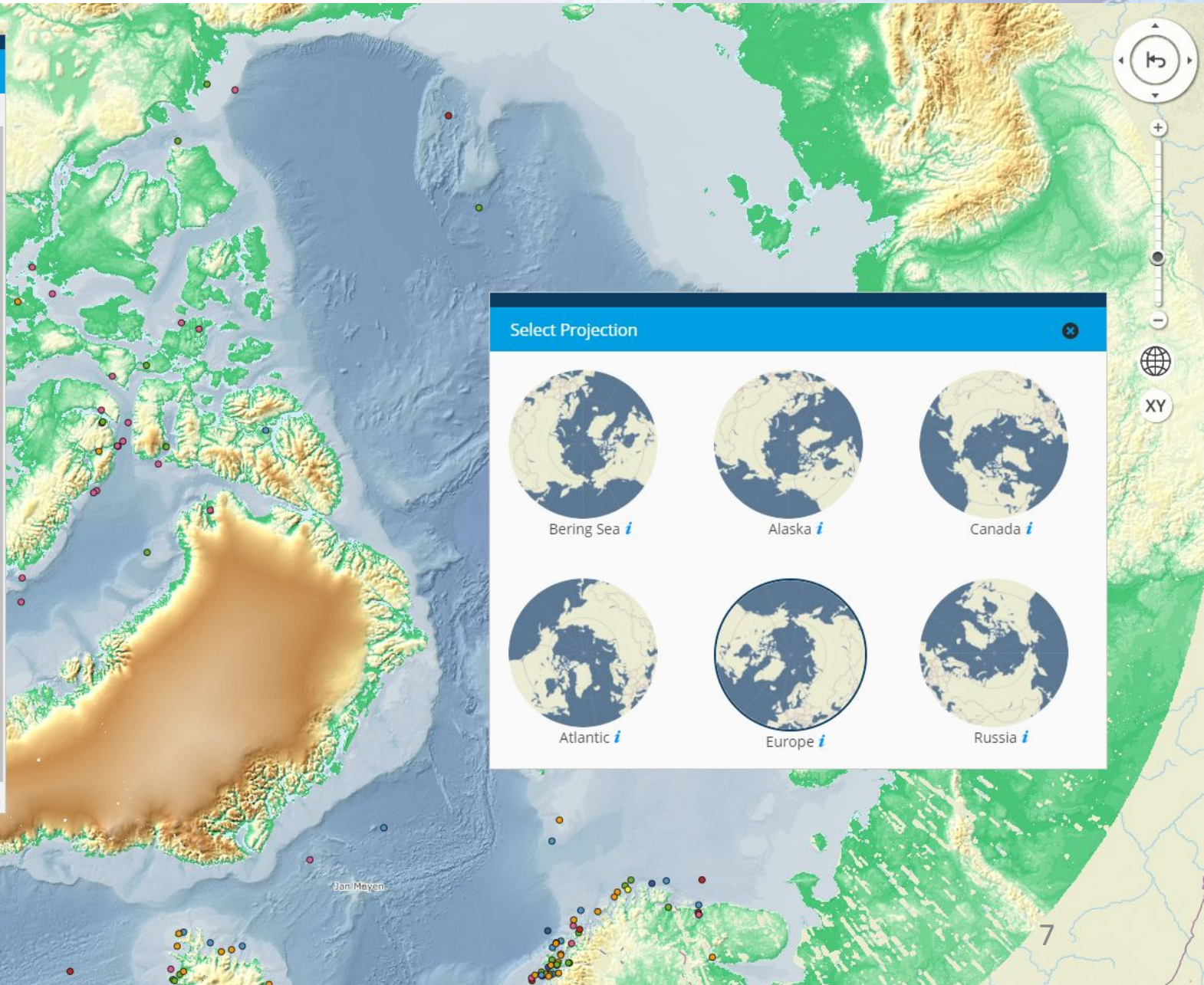
#### Arctic SDI Topographic Basemap

default


Populated places	Railway stations	Soil surface regions Moraines
National boundaries	Ports	Soil surface regions Moraines/stony
Sub-national boundaries	Seaplane bases	Soil surface regions Rocky
Protected sites	Heliports	Soil surface regions Rocky
Terrain contours	Airports	Soil surface regions Sand
Coastline Ordinary	Aerodrome areas	Agricultural areas
Coastline Steep and rocky	Main roads	Builtup areas
Sea	Main roads Tunnels	Quarters/farms/buildings
Waterbodies	Regional roads	Grass vegetation
Watercourse lines	Regional roads Tunnels	Shrub vegetation
Watercourse areas	Local roads	Tundra vegetation
Wetlands	Local roads Tunnels	Wood and forests
Glacier contours	Ferry crossings	Unclassified areas
Glaciers and snowfields*	Railway lines	
Glaciers and snowfields Icy precipices/fossil ice	Railway lines Tunnels	
Glaciers and snowfields* Icy precipices/fossil ice	Runway lines	


\*Symbol in map has no outline


Non regular roads





### Select Projection


Bering Sea 

Alaska 

Canada 

Atlantic 

Europe 

Russia 



Greenland Surface melting (1979 – 2004)

Snow accumulation (1971 – 1990)

Compare & Analyze

▼ Greenland Surface Melt (1979-2004)



default

- 60-102 days per year
- 45-60 days per year
- 30-45 days per year
- 15-30 days per year
- 1-15 days per year


▼ Greenland Snow Accumulation (1971-1990)

default

- 600-789 mm SWE per year (1971-1990)
- 500-600 mm SWE per year (1971-1990)
- 400-500 mm SWE per year (1971-1990)
- 300-400 mm SWE per year (1971-1990)
- 200-300 mm SWE per year (1971-1990)
- 100-200 mm SWE per year (1971-1990)
- 9-100 mm SWE per year (1971-1990)



# Pan-Arctic Gazetteer Search



Arctic Spatial  
Data Infrastructure

**SEARCH**

MAP LAYERS

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## Search

**Location search** Metadata Search

Search locations by typing a name of a place

ukus  **Search**

You search returned 24 results.  
Sort search results by clicking a column heading in the table below.

Search result 24 results by search term ukus

Placename	Region	Type
<a href="#">Ukkusik</a>	Greenland	Island
<a href="#">Leukus</a>	Finland	Populated places
<a href="#">Lukus</a>	Finland	Populated places
<a href="#">Lukus</a>	Finland	Populated places
<a href="#">Lukus</a>	Sweden	Populated places
<a href="#">Roukus</a>	Finland	Populated places
<a href="#">Ukura</a>	Finland	Populated places
<a href="#">Ukura</a>	Finland	Populated places
<a href="#">Ukura</a>	Finland	Populated places
<a href="#">Ukura</a>	Finland	Populated places
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<a href="#">Ukura</a>	Finland	Populated places
<a href="#">Ukura</a>	Finland	Populated places
<a href="#">Ukura</a>	Finland	Populated places
<a href="#">Ukkuseq</a>	Greenland	Coastal and shore relieves
<a href="#">Laukus</a>	Finland	Hydrographic features
<a href="#">Ukkusik</a>	Greenland	Natural terrain areas or regions
<a href="#">Ukura</a>	Finland	Terrain features
<a href="#">Ukura</a>	Finland	Terrain features
<a href="#">Ukura</a>	Finland	Terrain features
<a href="#">Ukura</a>	Finland	Terrain features
<a href="#">Ukura</a>	Finland	Terrain features

## Search

Location search

Metadata Search

Search Results

[Show only datasets](#) [Show only services](#) [Edit search options](#)

Name

- Circumpolar distribution of arctic char species complex *Salvelinus alpinus*, and related species (publication:2001-01-01, update frequency: irregular) [?](#) [i](#) [x](#)
- Cumulative numbers of marine fish. (publication:2014-12-16, update frequency: unknown) [?](#) [i](#) [x](#)
- Boundary for Arctic Assessment and Monitoring Programme (AMAP) working group of the Arctic Council [?](#) [i](#) [x](#)
- Lichen Arctic regions, CAFF [?](#) [i](#) [x](#)
- Locations of sub-Arctic and Arctic shipping accidents and incident causes, 1995-2004 (publication:2014-12-16, update frequency: irregular) [?](#) [i](#) [x](#)
  - Shipping Accidents and Incident Causes [Hide map layer](#)
- Arctic vascular plant species (publication:2014-12-16, update frequency: unknown) [?](#) [i](#) [x](#)
- The Arctic Ocean and adjacent seas: marine fish species (AOAS regions) (publication:2014-12-16, update frequency: irregular) [?](#) [i](#) [x](#)
- Arctic SDI Discovery Service, Arctic SDI [?](#) [i](#) [x](#)
- Boundaries of the geographic area covered by the Arctic Biodiversity Assessment, CAFF (creation:2001-02-01, update frequency: asNeeded) [?](#) [i](#) [x](#)
  - CAFF Boundary [Show map layer](#)
- Avian biodiversity in different regions of the Arctic (publication:2014-12-16, update frequency: unknown) [?](#) [i](#) [x](#)
- Major flyways of Arctic birds (publication:2015-02-18, update frequency: unknown) [?](#) [i](#) [x](#)

## Metadata

### Locations of sub-Arctic and Arctic shipping accidents and incident causes, 1995-2004

Basic information

ISO 19115 metadata

Inspire metadata

Data quality

Actions



## LOCATIONS OF SUB-ARCTIC AND ARCTIC SHIPPING ACCIDENTS AND INCIDENT CAUSES, 1995-2004

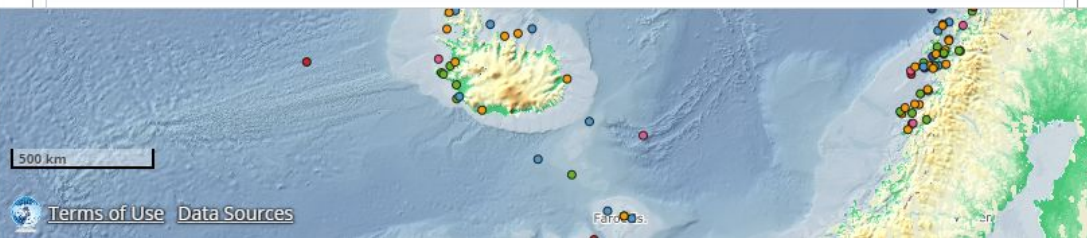
### ABSTRACT TEXT (DATA)

Locations of sub-Arctic and Arctic shipping accidents and incident causes, 1995-2004 (source: Arctic Marine Shipping Assessment 2009).

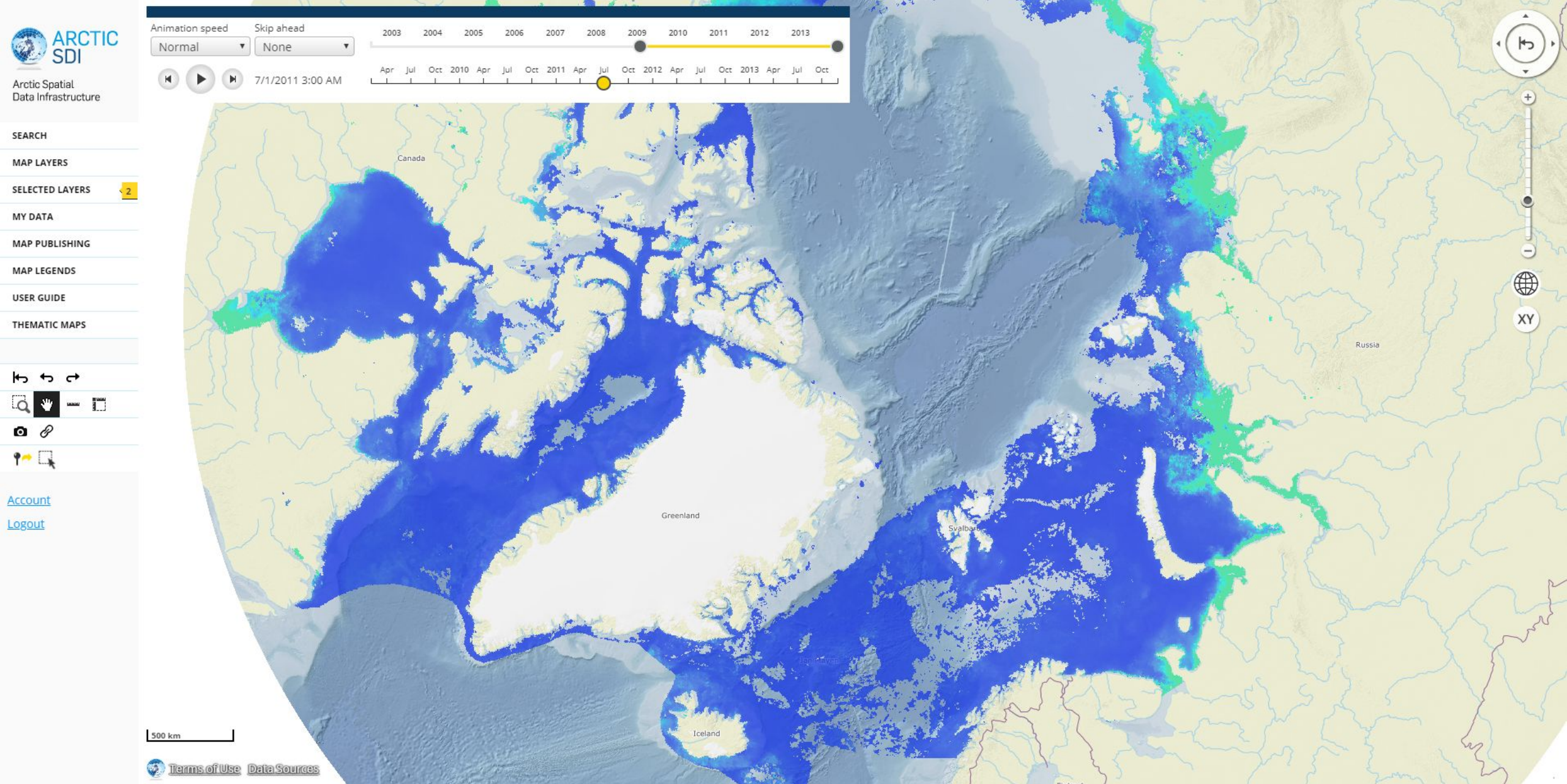
Published in the Arctic Biodiversity Assessment (ABA) released in 2014.

### METADATA DATE

2017-03-21T09:22Z







# Visualization of Time Series



### Basic settings

Website address (without http and www prefixes)

caff.is

Map name (required)

Alaska-Yukon Bioclimate data

Language

English

### Map Size

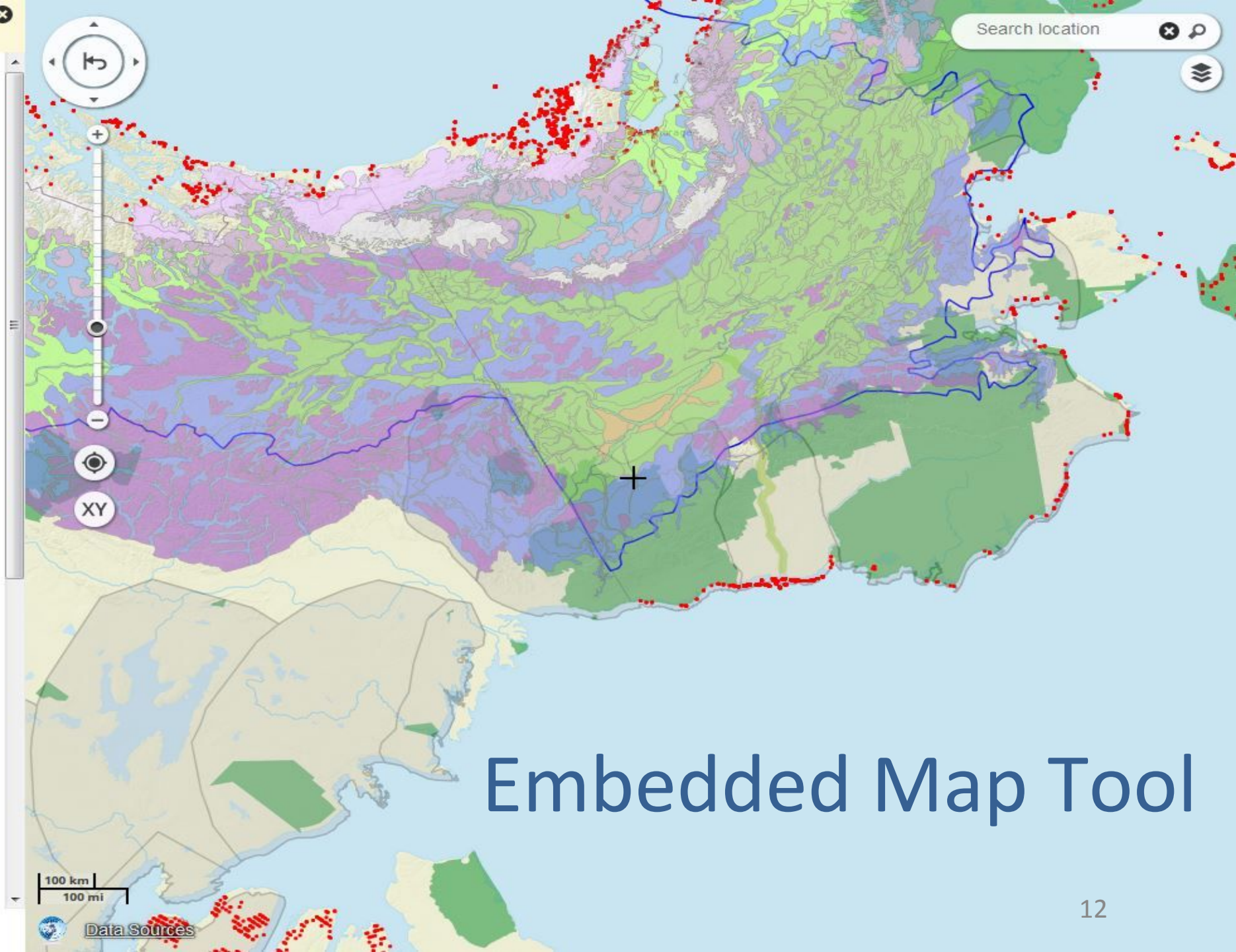
### Map Layers

### Tools

- ☒ Scale bar
- ☐ Index map
- ☒ Map layers menu
 

Select the background map layer. You can select the default background map layer in the map preview.

  - ☒ Arctic SDI Background Map
  - ☐ Protected Areas
  - ☐ AMAP Boundary
  - ☐ Caribou herds 2014
  - ☐ CAFF CBird
  - ☐ BioClimate Map Alaska-Yukon
- ☒ Pan tool
- ☐ Map tools
- ☒ Zoom bar
- ☒ Coordinate tool
  - ☐ Hide user interface (Use RPC interface)
- ☒ Center to location



# Embedded Map Tool



CAFF

Conservation of Arctic Flora and Fauna

About

Monitoring

Assessments

Strategies


Policy

Expert Groups

Data

Publications

Press



WORLDWIDE

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Protected Areas Index

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Search

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Monitoring: The CBMP

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Marine Ecosystem

Freshwater Ecosystem

Terrestrial Ecosystem

Coastal Ecosystem

Community Based Monitoring

Indices and Indicators

Monitoring Data

Monitoring Publications

CBMP Newsletter

CBMP Partners

Contact the CBMP

Interact WPF


Data

Protected Areas Indicator data and graphics

Protected Areas Indicator Report

Get the graphics and the data


Protected Areas Indicator Report 2017




Protected Areas Index 2017

Protected areas have long been viewed as a key element for maintaining and conserving Arctic biodiversity and the functioning landscapes upon which species depend. Arctic protected areas have been established in strategically important and representative areas, helping to maintain crucial ecological features, e.g., caribou migration and calving areas, shorebird and waterfowl staging and nesting sites, seabird colonies, and critical components of marine mammal habitats.

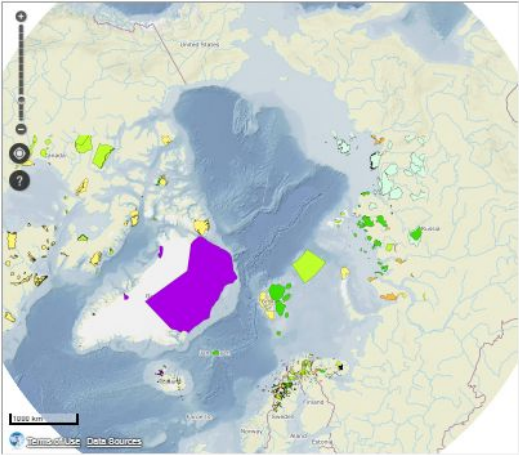
CAFF and the Protection of the Arctic Marine Environment (PAME) working groups have created an indicator report that provides an overview of the status and trends of Arctic protected areas.

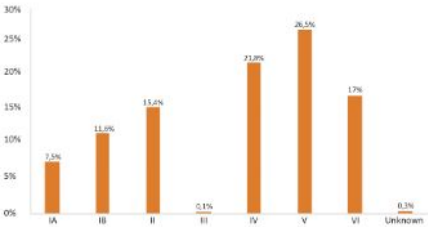




**Key facts:**

The extent of protected areas within the CAFF boundary has almost doubled since 1980. While progress has been made, it has not been even across ecosystems and the report does not analyse how well the suite of protected areas meet the test of being an "ecologically connected, representative, and effectively managed network of protected and specially managed areas that protects and promotes the resilience of the biological diversity, ecological processes and cultural heritage" (PAME 2015) of the Arctic.





Marine Protected Areas according to IUCN categories

Terrestrial Protected Areas according to IUCN categories

Figure 3: Distribution of protected areas (marine and terrestrial) across each of the six IUCN Management Categories, 2016.

Marine Protected Areas according to IUCN categories

Terrestrial Protected Areas according to IUCN categories

Category	Percentage
I	1.5%
II	0.5%
III	0.5%
IV	0.5%
V	65.5%
VI	1.5%
Unknown	0.5%

Category	Percentage
I	1.5%
II	1.5%
III	1.5%
IV	1.5%
V	65.5%
VI	1.5%
Unknown	0.5%

Currently, in 2016, 20.2% of the Arctic's terrestrial area and 4.7% of the Arctic's marine areas are protected. Protected area coverage of the Arctic's terrestrial ecosystems exceeds Aichi Biodiversity Target 11 which aims for at least 17% of terrestrial and inland water to be protected by 2020. The protected area coverage of marine areas currently falls short of the Aichi Target goal for 10% of coastal and marine areas to be protected by 2020.

Year	Terrestrial (%)	Marine (%)
1900	0	0
1920	0	0
1940	0	0
1960	0	0
1980	10	0
1995	15	0
2005	18	2
2016	20	5


Figure 2: Trends in terrestrial and marine protected area coverage within the CAFF boundary, 1900-2016.

Within the CAFF boundary there are 92 areas recognised under global international conventions. These include 12 World Heritage sites (three of which have a marine component) and 80 Ramsar sites, which together cover 0.9% (289,931 km<sup>2</sup>) of the CAFF area. Between 1985 and 2015, the total area covered by Ramsar sites almost doubled, while the total area designated as World Heritage sites increased by about 50% in the same time period.

Display

Sort By: Ordering ASC


Circumpolar Biodiversity Monitoring Program Coastal Expert Monitoring Group and Nordic Workshop Report Tromsø, Norway, January 9-10, 2018



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Circumpolar Biodiversity Monitoring Program Strategic Plan: 2018-2021



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Circumpolar Biodiversity Monitoring Program (CBMP) Coastal Expert Workshop Meeting Report, Anchorage, Alaska, U.S.A., October 11-13, 2017



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Arctic Freshwater Biodiversity Monitoring Plan Annual Report 2017 and Work Plan 2018



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Marine Fishes of the Arctic Region Volume 1




Marine Fishes of the Arctic Region is intended for all who do research in and monitoring of marine ecosystems in the Arctic. It presents accounts for 205 species with maps of global distribution and descriptions of morphology and habitat, as well as a photographic identification guide. Information on 24 other species present only in the fringes of the Arctic Region or taxonomically problematic is given in the introductions to the fish families. As the Arctic continues to warm, more cold-temperate species are expected to enter the region and the distribution of true Arctic species will likely retract as the area of ice-covered cold water shrinks. The maps in this atlas can be used to compare future changes in distributions. The identification guide will be particularly helpful for identifying cold-water species, since fewer identification tools are available for this group of fishes.

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Arctic Marine Biodiversity Monitoring Plan Implementation: Greenland, 2017



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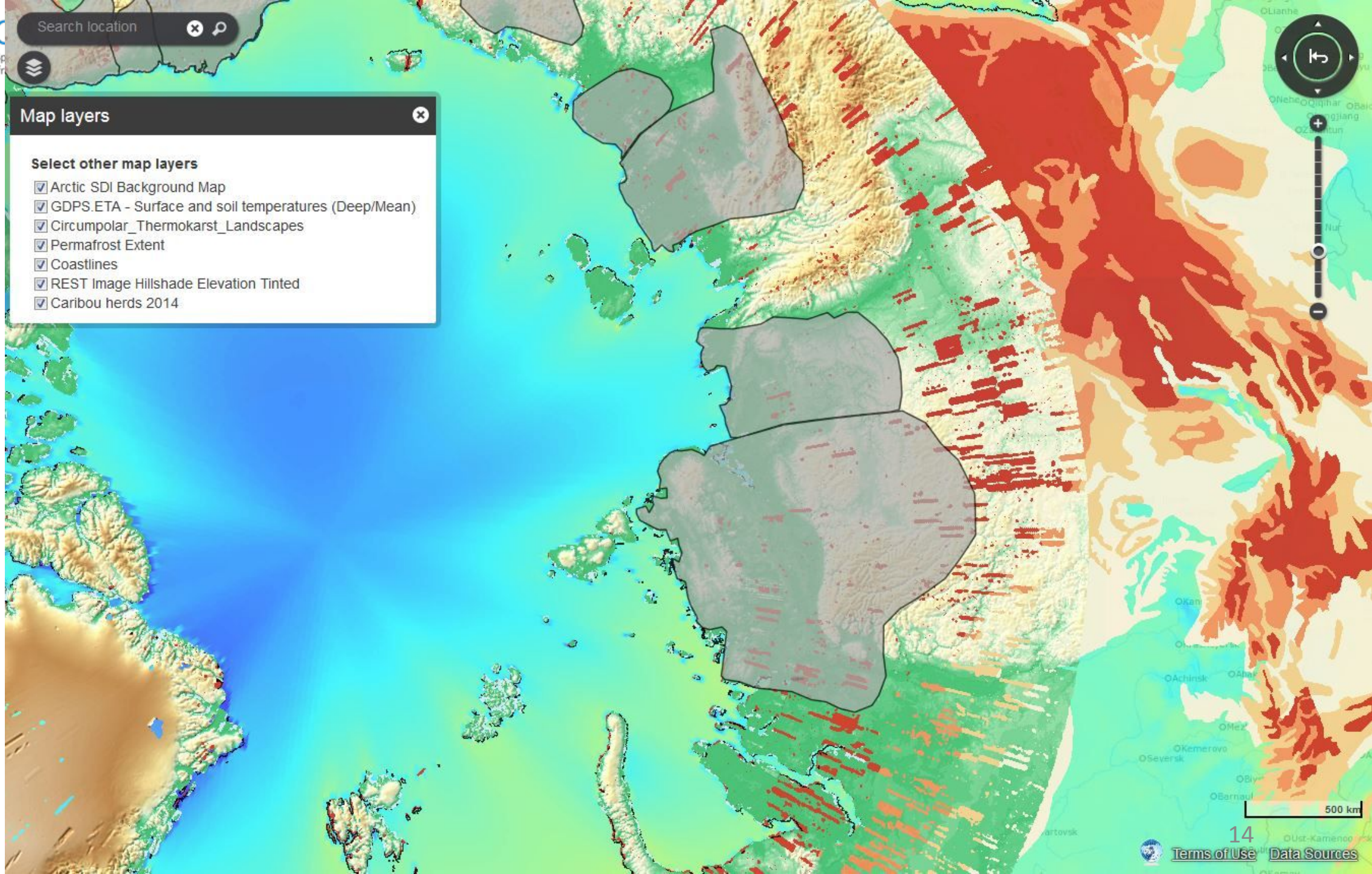
Details



# Embedded Map Example



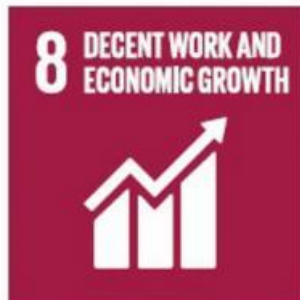
ARCTIC  
SDI Arctic Sp  
Data Infr

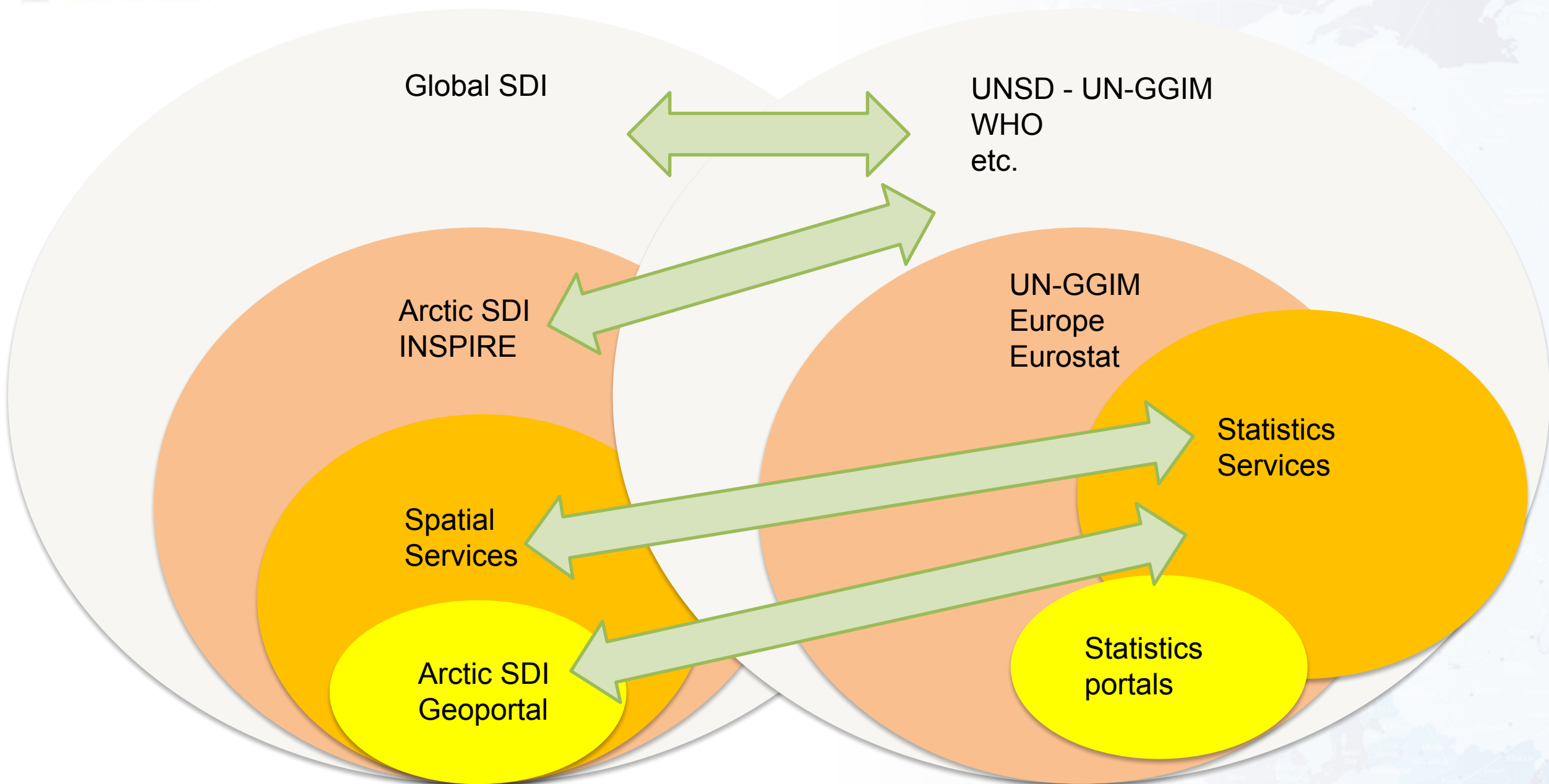




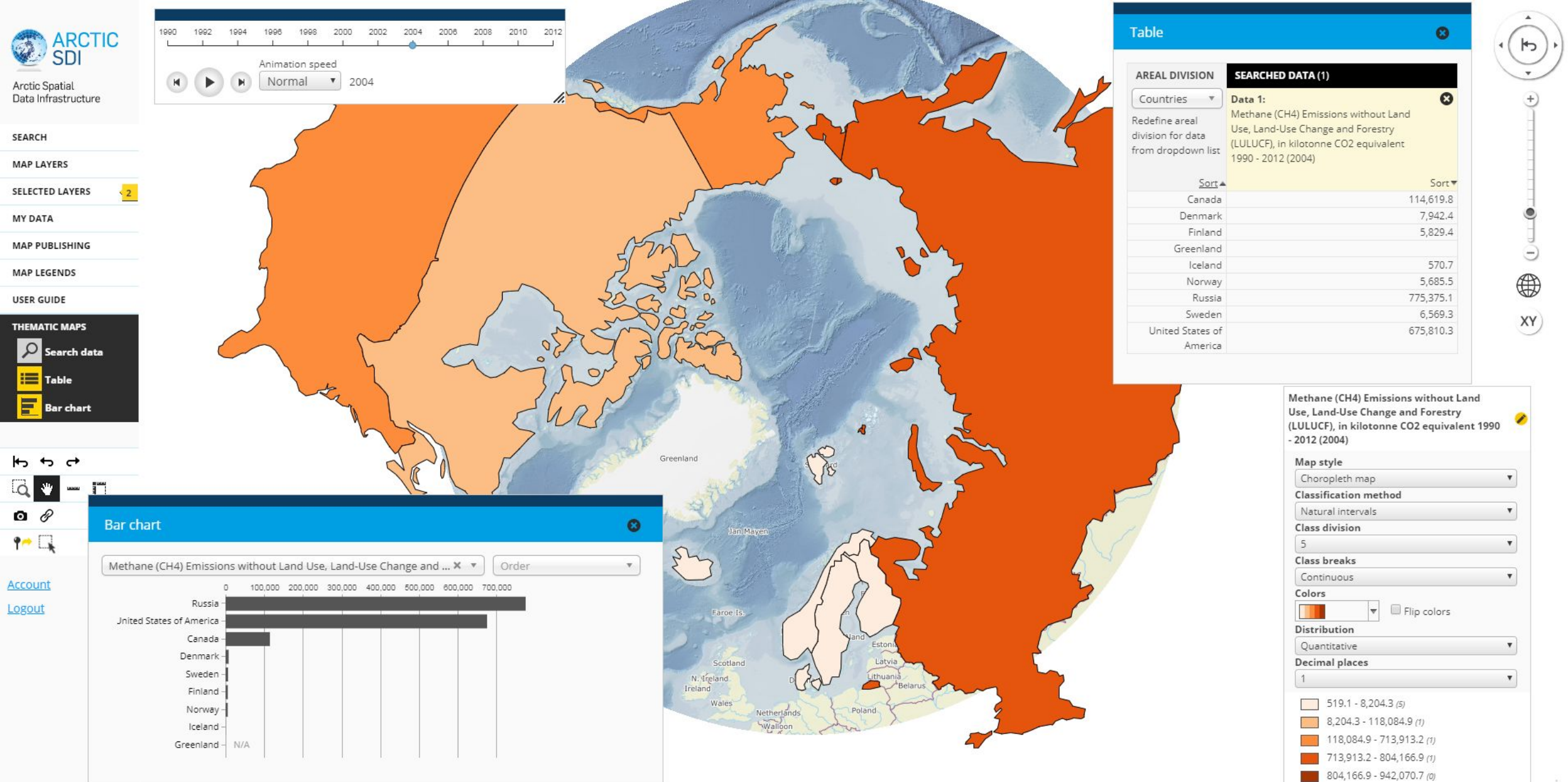


# SUSTAINABLE DEVELOPMENT GOALS

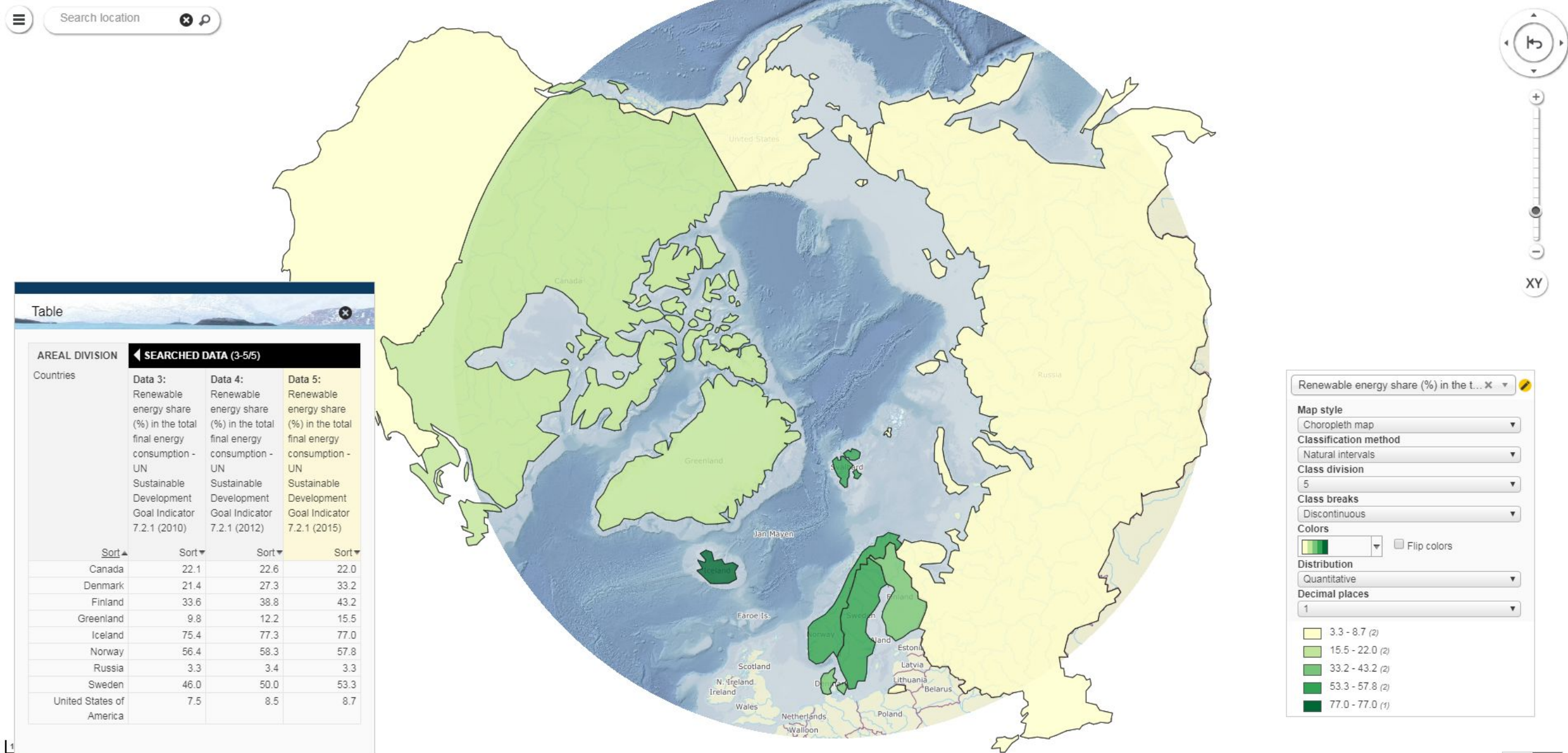






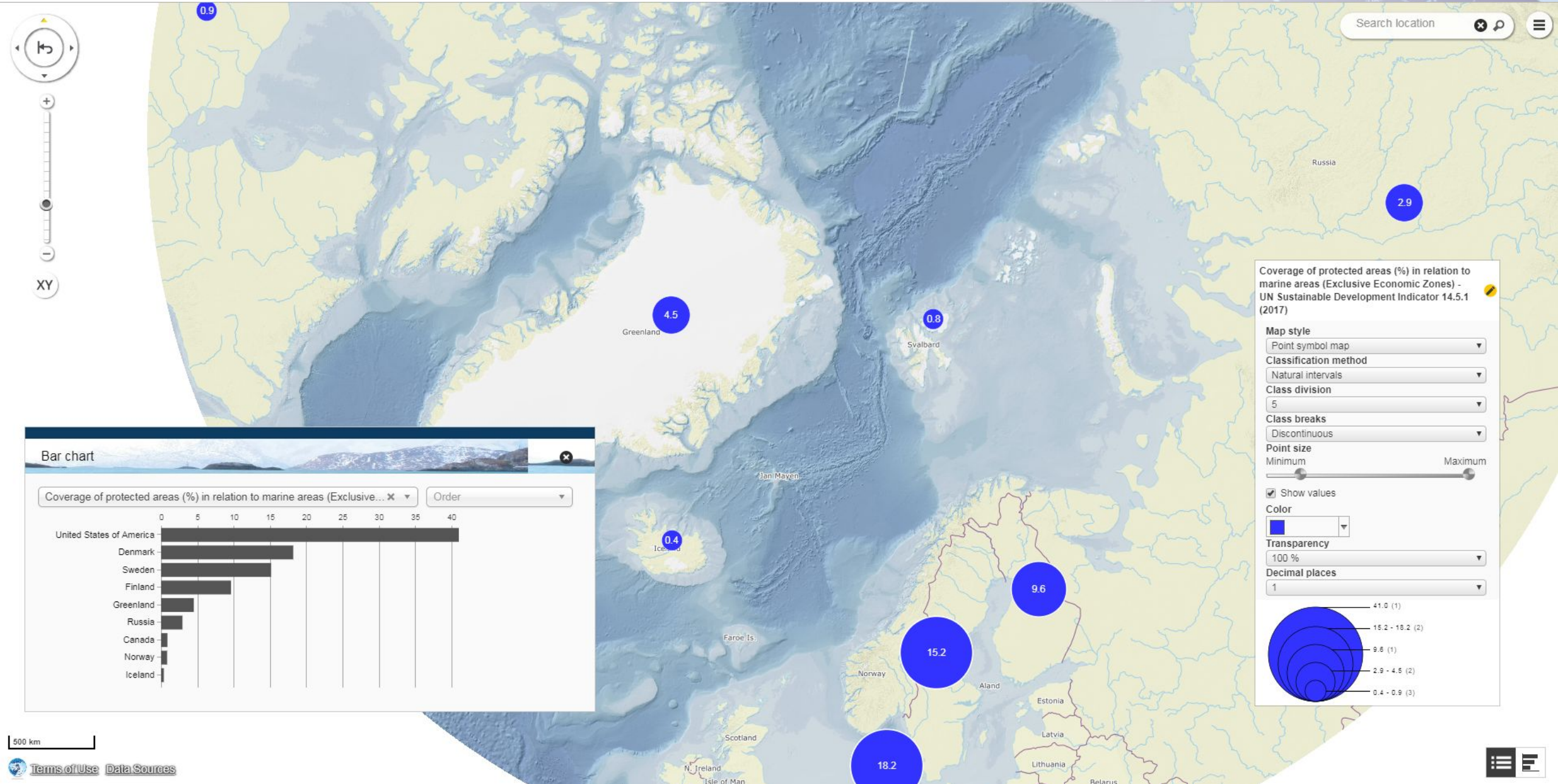


Visualizing Statistical data - beta



# Embedded map - UN SDG Indicator 7.2.1





# Embedded map - UN SDG Indicator 14.5.1



# In Summary, The Arctic SDI provides

- Access to Authoritative data across the Arctic
- Capacity building materials on principles of SDIs, how to bring your own data in and leverage from it
- Geoportal with Embedded maps, Time Series visualization and other tools to help Arctic stakeholders deliver and visualize their data to decisionmakers and other audiences
- **Coming up:** Tools to visualize statistical and spatial data, e.g. SDGs, over the Arctic to demonstrate the changing Arctic





**ARCTIC  
SDI** Arctic Spatial  
Data Infrastructure

***arctic-sdi.org***  
***geoportal.arctic-sdi.org***  
***Arctic SDI Video:***  
**<https://youtu.be/tGS1rcaJRug>**